CLAIMS

What is claimed is:

1. A vapor compression system comprising:

a compression device to compress a refrigerant to a high pressure;

a heat rejecting heat exchanger for cooling said refrigerant;

an expansion device for reducing said refrigerant to a low pressure;

a heat accepting heat exchanger for evaporating said refrigerant; and

an auxiliary heater that selectively heats at least one of the refrigerant and a fluid that absorbs heat from said refrigerant flowing through said heat rejecting heat exchanger.

2. The vapor compression system as recited in claim 1 wherein said heat rejecting heat exchanger includes a fluid outlet, and wherein said auxiliary heater directly heats a fluid that exits said heat rejecting heat exchanger through said fluid outlet.

3. The vapor compression system as recited in claim 2 including a fluid temperature sensor to detect a temperature of said fluid that exits said fluid outlet and a control that activates said auxiliary heater when said fluid temperature sensor detects that said temperature of said fluid is below a threshold value.

4. The vapor compression system as recited in claim 2 including an ambient temperature sensor to detect an outdoor air temperature and a control that activates said auxiliary heater when said ambient temperature sensor detects that said outdoor air temperature is below a threshold value.

5. The vapor compression system as recited in claim 2 including an ambient temperature sensor to detect an outdoor air temperature, a water pump to pump a fluid through said heat rejecting heat exchanger and a control, and said control increases a speed of said water pump to lower an exit temperature of said fluid exiting said heat rejecting heat exchanger and activates said auxiliary heater to heat said fluid exiting said heat rejecting heat exchanger when said ambient temperature sensor detects that said outdoor air temperature is below a threshold value.

6. The vapor compression system as recited in claim 1 including a water tank and wherein said heat rejecting heat exchanger includes a fluid outlet in fluid communication with said water tank, and said auxiliary heater heats a fluid in said water tank.

7. The vapor compression system as recited in claim 6 further including a fluid temperature sensor to detect a temperature of said fluid in said water tank.

8. The vapor compression system as recited in claim 7 further including a control, and said control activates said auxiliary heater when said fluid temperature sensor detects that said temperature of said fluid is below a first threshold value and said control deactivates said auxiliary heater when said fluid temperature sensor detects that said temperature of said fluid is above a second threshold value

9. The vapor compression system as recited in claim 1 wherein said compression device further includes a compressor discharge, and wherein said auxiliary heater heats said refrigerant that exits said compressor through said compressor discharge.

10. The vapor compression system as recited in claim 9 including an ambient temperature sensor that detects a temperature of outdoor air.

11. The vapor compression system as recited in claim 10 further including a control, and said control activates said auxiliary heater when said ambient temperature sensor detects that said temperature of said outdoor air is below a threshold value.

12. The vapor compression system as recited in claim 11 including a defrost sensor that detects a defrosting condition of said heat accepting heat exchanger, and said control activates said auxiliary heater when said defrost sensor detects said defrosting condition.

13. The vapor compression system as recited in claim 1 wherein said auxiliary heater is an electric heater.

14. The vapor compression system as recited in claim 1 wherein said refrigerant is carbon dioxide.

15. A method of increasing heating capacity of a transcritical vapor compression system having at least one auxiliary heater comprising the steps of:

compressing a refrigerant to a high pressure;

rejecting heat from said refrigerant into a fluid;

expanding said refrigerant to a low pressure;

evaporating said refrigerant; and

activating the auxiliary heater to selectively further heat at least one said fluid and said refrigerant with said auxiliary heater.

16. The method as recited in claim 15 wherein the step of further heating said fluid includes directly heating said fluid after the step of rejecting heat.

17. The method as recited in claim 15 wherein the step of further heating said fluid includes directly heating said refrigerant after the step of compressing and before the step of rejecting heat.

18. The method as recited in claim 15 further including the step of detecting a temperature of said fluid, and the step of activating said auxiliary heater includes activating said auxiliary heater when said temperature is below a threshold value.

19. The method as recited in claim 15 further including the step of detecting a temperature of outdoor air, and the step of activating said auxiliary heater includes activating said auxiliary heater when said temperature is below a threshold value.